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FIG 1A

AAV-1	ttgcccactccctctctgcgcgctcgctcgctcggtggggcctgcggaaccaaagggtccgc	60
AAV-2	...g.....ac..a....g.gc.....gc.	60
AAV-6	...g.....ac..a....g.gc.....gc.	60
Rep binding site		
AAV-1	agacggcagagctctgctctgcccggccacccgagcgagcgagcgcgagagagggagtg	120
AAV-2	c....c.c.g...t...c.g.g.....t..gt.....	120
AAV-6	c....c.c.g...t...c.g.g.....t..gt.....	120
TRS		
AAV-1	ggcaactccatcactaggggtaaTCGCGAAGCGCCTCCCACGCTGCCGCGTCAGCGCTGA	180
AAV-2	.c.....--..ct.G..G.-----TG.A...G-----	163
AAV-6	.c.....--..ct.G..G.-----TG.A...G-----	163
E box/USF		
AAV-1	CGTAAATTACGTCATAGGG---GAGTGGTCCTGTATTAGCTGTCACGTGAGTGCTTTTGC	237
AAV-2	...G.....TTA.G.A.....AG.....-.....	222
AAV-6	...G.....TTA.G.A.....AG.....-.....	222
YY1 P5/TATA		
AAV-1	GACATTTTGCGACACCACGTGGCCATTTAGGGTATATATGGCCGAGTGAGCGAGCAGGAT	297
AAV-2	.....T....T..CGCT.....T..A.C.....AC.....G.	282
AAV-6	.....T....T..CGCT.....T..A.C.....AC.....G.	282
YY1/p5 RNA Rep 78/68		
AAV-1	CTCCATTTTGAC-CGCGAAATTGAAACGAGCAGCAGCCATGCCGGGCTTCTACGAGATCG	356
AAV-2	.....AG..G..GG.....C.....C.....G..T.....T.	342
AAV-6	.....AG..G..GG.....C.....-.....G..T.....T.	341
AAV-1	TGATCAAGGTGCCGAGCGACCTGGACGAGCACCTGCCGGGCATTCTGACTCGTTTGTGA	416
AAV-2	....T....C..C.....T....G...T....C.....AGC.....	402
AAV-6	....T....C..C.....T....T....C.....AGC.....	401
AAV-1	GCTGGGTGGCCGAGAAGGAATGGGAGCTGCCCCCGGATTCTGACATGGATCTGAATCTGA	476
AAV-2	A.....T....G..A.....	462
AAV-6	A.....T....G..A.....	461
AAV-1	TTGAGCAGGCACCCCTGACCGTGGCCGAGAAGCTGCAGCGCGACTTCCTGGTCCAATGGC	536
AAV-2	.....T...ACGG.....	522
AAV-6	.....G....	521
AAV-1	GCCGCGTGAGTAAGGCCCGGAGGCCCTCTTCTTTGTTTCAGTTCGAGAAGGGCGAGTCCT	596
AAV-2	....T.....T.....G..A..T.....A...AG..	582
AAV-6	.....	581
AAV-1	ACTTCCACCTCCATATTCTGGTGGAGACCACGGGGGTCAAATCCATGGTGCTGGGCCGCT	656
AAV-2	.....A.G..CG.G..C.....A....C.....G.....TT....A..T.	642
AAV-6	.....	641
AAV-1	TCCTGAGTCAGATTAGGGACAAGCTGGTGCAGACCATCTACCGCGGGATCGAGCCGACCC	716
AAV-2	.....C.C..A..A...A.T....GA..T.....TT	702
AAV-6	.....	701
AAV-1	TGCCCAACTGGTTCGCGGTGACCAAGACGCGTAATGGCGCCGGAGGGGGGAACAAGGTGG	776
AAV-2A.....C..A....CA.A.....C.....	762
AAV-6	761

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FIG 1B

AAV-1	TGGACGAGTGCTACATCCCCAACTACCTCCTGCCCAAGACTCAGCCCGAGCTGCAGTGGG	836
AAV-2	....T.....T...T.G..C.....A..C.....T.....C.....	822
AAV-6	.....	821
P19/TATA		P19 RNA
AAV-1	CGTGGACTAACATGGAGGAGTATATAAGCGCCTGTTTGAACCTGGCCGAGCGCAAACGGC	896
AAV-2	.....T.....AC.....T.....C.....G..T..CA.G.....T.....T	882
AAV-6	.....C.....GG.....A.....G.....A..C..GG.C.....	881
AAV-1	TCGTGGCGCAGCACCTGACCCACGTCAGCCAGACCCAGGAGCAGAACAAGGAGAATCTGA	956
AAV-2	.G.....T.....G.....GTCG.....G.....A.....A..	942
AAV-6	.....CG.....	941
		Rep 52/40
AAV-1	ACCCCAATTCTGACGCGCCTGTCATCCGGTCAAAAACCTCCGCGCGCTACATGGAGCTGG	1016
AAV-2	.T.....T.....G..G...A.A.....T..A..CA.G.....	1002
AAV-6	.....A.....	1001
AAV-1	TCGGGTGGCTGGTGGACCGGGGCATCACCTCCGAGAAGCAGTGGATCCAGGAGGACCAGG	1076
AAV-2	.....C.....AA...G..T.....G.....	1062
AAV-6	.....	1061
AAV-1	CCTCGTACATCTCCTTCAACGCCGCTTCCAACCTCGCGGTCCCAGATCAAGGCCGCTCTGG	1136
AAV-2	....A.....T..G..C.....A.....T..CT...	1122
AAV-6	.....	1121
AAV-1	ACAATGCCGGCAAGATCATGGCGCTGACCAAATCCGCGCCCGACTACCTGGTAGGCCCCG	1196
AAV-2	.....G..A.....T...AGC.....T...A....C.....G....AGC	1182
AAV-6	.....	1181
AAV-1	CTCCGCCCGCGGACATTAAAACCAACCGCATCTACCGCATCCTGGAGCTGAACGGCTACG	1256
AAV-2	AG..CGTG.A.....TCC.G...T..G..T..TAAA..TT....A..A.....G....	1242
AAV-6	.....C.....T.....	1241
AAV-1	AACCTGCCTACGCCGGCTCCGTCTTTCTCGGCTGGGCCCAGAAAAGGTTTCGGGAAGCGCA	1316
AAV-2	.T..CCAA..T..G.CT.....G..A.....AC.....A.....C...A.G.	1302
AAV-6	.C.....A..A....	1301
AAV-1	ACACCATCTGGCTGTTTGGGCCGGCCACCACGGGCAAGACCAACATCGCGGAAGCCATCG	1376
AAV-2	.....T..A..T..C..G.....G.....A.	1362
AAV-6	.....	1361
AAV-1	CCCACGCCGTGCCCTTCTACGGCTGCGTCAACTGGACCAATGAGAACTTTCCTTCAATG	1436
AAV-2	....A.T.....G.....A.....C.	1422
AAV-6	.....C.	1421
AAV-1	ATTGCGTCGACAAGATGGTGATCTGGTGGGAGGAGGGCAAGATGACGGCCAAGGTCGTGG	1496
AAV-2	.C..T.....G.....C.....	1482
AAV-6	.....	1481
AAV-1	AGTCCGCCAAGGCCATTCTCGGCGGCAGCAAGGTGCGCGTGGACCAAAGTGCAAGTCGT	1556
AAV-2	....G....A.....A..A.....G..A.....C.	1542
AAV-6	.....	1541
AAV-1	CCGCCCAGATCGACCCCAACCCCGTGATCGTCACCTCCAACACCAACATGTGCGCCGTGA	1616
AAV-2	.G.....A.....G..T.....	1602
AAV-6T.....	1601

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FIG 1C

AAV-1 TTGACGGGAACAGCACCACCTTCGAGCACCAGCAGCCGTTGCAGGACCGGATGTTCAAAT 1676
AAV-2TCA..G.....A.....A..... 1662
AAV-6 1661

AAV-1 TTGAACTCACCCGCCGTCTGGAGCATGACTTTGGCAAGGTGACAAAGCAGGAAGTCAAAG 1740
AAV-2T.....G.....C..C..... 1722
AAV-6 1721

AAV-1 AGTTCTTCCGCTGGGCGCAGGATCACGTGACCGAGGTGGCGCATGAGTTCTACGTCAGAA 1796
AAV-2 .C..T.....G.....AA.....GTT.....A.....A.....A.. 1782
AAV-6 1781

P40/TATA

AAV-1 AGGGTGGAGCCAACAAAAGACCCGCCCCCGATGACGCGGATAAAAGCGAGCCCAAGCGGG 1856
AAV-2G.....AG.....A....T...T.....A.... 1842
AAV-6G..... 1841

P40 RNA

AAV-1 CCTGCCCCCTCAGTCGCGGATCCATCGACGTCAGACGCGGAAGGAGCTCCGGTGGACTTTG 1916
AAV-2 TGC..GAG.....T...C.G.....---..T..A.CA...AC. 1899
AAV-6 1901

▼

AAV-1 CCGACAGGTACCAAAACAAATGTTCTCGTCACGCGGGCATGCTTCAGATGCTGTTTCCCT 1976
AAV-2 .A.....T.....AA..T..... 1959
AAV-6 1961

AAV-1 GCAAGACATGCGAGAGAATGAATCAGAATTTCAACATTTGCTTCACGCACGGGACGAGAG 2036
AAV-2 ...GACA.....CA..T..C.....T....ACA..A.. 2019
AAV-6A.....C.... 2021

AAV-1 ACTGTTTCAGAGTGCTTCCCCGGCGTGTCAGAATCTCAACCGGTC---GTCAGAAAGAGGA 2093
AAV-2T.....T..---.....C..TTCT...GTC..A.A.G 2076
AAV-6A..T.....---..... 2078

AAV-1 CGTATCGGAAACTCTGTGCCATTCATCATCTGCTGGGGCGGGCTCCCGAGATTGCTTGCT 2153
AAV-2A.....G..CTA.....A.CA....AAA..TG..A..---C.....A 2133
AAV-6 2138

Rep 78 stop

AAV-1 CGGCCTGCGATCTGGTCAACGTGGACCTGGATGACTGTGTTTCTGAGCAATAAATGACTT 2213
AAV-2 .T.....T.....TT.....CA.C.T...A.....T.. 2193
AAV-6T..... 2193

▽ VP1

Rep 68 stop

AAV-1 AAACCAGGTATGGCTGCCGATGGTTATCTTCCAGATTGGCTCGAGGACAACCTCTCTGAG 2273
AAV-2 ...T.....CT.....A 2253
AAV-6AC.....G 2258

AAV-1 GGCATTCGCGAGTGGTGGGACTTGAAACCTGGAGCCCCGAAGCCCAAGCCAACCAGCAA 2333
AAV-2 ..A..AA.AC.....A.GC.C.....CC.A..ACCA..A..GC..GCAG...GG 2313
AAV-6A..... 2318

AAV-1 AAGCAGGACGACGGCCGGGGTCTGGTGCTTCCTGGCTACAAGTACCTCGGACCCTTCAAC 2393
AAV-2 C.TA.....A..A.....T.....G..... 2373
AAV-6G..C.....G.....C..... 2378

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FIG 1D

AAV-1	GGACTCGACAAGGGGGGAGCCCGTCAACGCGGCGGACGCAGCGGCCCTCGAGCACGACAAG	2453
AAV-2	.....A.....G.....A...A.....C.....A	2433
AAV-6	.....T.....	2438
AAV-1	GCCTACGACCAGCAGCTCAAAGCGGGTGACAATCCGTACCTGCGGTATAACCACGCCGAC	2513
AAV-2	.....G.....G.CAGC..A.....C.....CAA...C.....	2493
AAV-6	.....A.AGCG..T.....T.....GCG...T.....	2498
AAV-1	GCCGAGTTTCAGGAGCGTCTGCAAGAAGATACGTCTTTTGGGGGCAACCTCGGGCGAGCA	2573
AAV-2	..G.....C..TA.....A.....	2553
AAV-6	..C.....T..GC.....G.....	2558
AAV-1	GTCTTCCAGGCCAAGAAGCGGGTTCTCGAACCTCTCGGTCTGGTTGAGGAAGGCGCTAAG	2633
AAV-2	.....G..A...A.....T.....G..C.....CCT.T....	2613
AAV-6	.....A.....T.T.....T.....	2618
	<u>VP2</u>	
AAV-1	ACGGCTCCTGGAAAGAAACGTCCGGTAGAGCAGTCGCCACAAGAGCCAGACTCCTCCTCG	2693
AAV-2	.....G.....A..GA.G.....C..T..TGTG.....	2673
AAV-6	.....T.....G..AC.T.....G..G..ACAA.....	2678
AAV-1	GGCATCGGCAAGACAGGCCAGCAGCCCGCTAAAAAGAGACTCAATTTTGGTCAGACTGGC	2753
AAV-2	..A.C...A...G.G.....T..A.G...A...T.G.....A	2733
AAV-6	.....T.....	2738
AAV-1	GACTCAGAGTCAGTCCCCGATCCACAACCTCTCGGAGAACCTCCAGCAACCCCCGCTGCT	2813
AAV-2	...G....C.....A..T..C..C..G.....C.G..A.....G.....T...G.	2793
AAV-6	...T....G.....C..C..C..A..A.....G.A..T.....A.....G.....	2798
	<u>VP3</u>	
AAV-1	GTGGGACCTACTACAATGGCTTCAGGCGGTGGCGCACCAATGGCAGACAATAACGAAGGC	2873
AAV-2	C.....A...A...G.....A.....A.....G...	2853
AAV-6	.....	2858
AAV-1	GCCGACGGAGTGGGTAATGCCTCAGGAAATTGGCATTGCGATTCCACATGGCTGGGCGAC	2933
AAV-2	.....T....C.....A.....	2913
AAV-6	.....	2918
AAV-1	AGAGTCATCACCACCAGCACCCGCACCTGGGCCTTGCCCACCTACAATAACCACCTCTAC	2993
AAV-2	.....A.....C.....C.....	2973
AAV-6	.....A..A.....T..C.....	2978
AAV-1	AAGCAAATCTCCAGTGCTTCAACGGGGGCCAGCAACGACAACCACTACTTCGGCTACAGC	3053
AAV-2	..A.....T.....CCAA...---..A...TCG.....T.....T.....	3030
AAV-6	.....	3038
AAV-1	ACCCCCTGGGGGTATTTTGATTTC AACAGATTCCACTGCCACTTTTCACCACGTGACTGG	3113
AAV-2	.....T.....C.....	3090
AAV-6	.....T..C.....	3098
AAV-1	CAGCGACTCATCAACAACAATTGGGGATTCCGGGCCCAAGAGACTCAACTTCAAACCTCTTC	3173
AAV-2	..AA.....C.....A.....G.....T	3150
AAV-6	.....G.....	3158
AAV-1	AACATCCAAGTCAAGGAGGTCACGACGAATGATGGCGTCACAACCATCGCTAATAACCTT	3233
AAV-2T.....A.....CA.....C..TACG..G..G..T..C.....	3210
AAV-6G.....	3218

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FIG 1E

AAV-1	ACCAGCACGGTTCAAGTCTTCTCGGACTCGGAGTACCAGCTTCCGTACGTCCTCGGCTCT	3293
AAV-2	.....G..G..TA..T.....C.....G	3270
AAV-6	.....T.G.....	3278
AAV-1	GCGCACCAGGGCTGCCTCCCTCCGTTCCCGGGCGGACGTGTTTCATGATTCCGCAATACGGC	3353
AAV-2	.....T..A..A.....G.....A..A.....C.....G.G..A..G..T..A	3330
AAV-6	.....G.....	3338
AAV-1	TACCTGACGCTCAACAATGGCAGCCAAGCCGTGGGACGTTTCATCCTTTTACTGCCTGGAA	3413
AAV-2	.....C..C..G.....C..G..T..G..A..A.....C..T..A.....G	3390
AAV-6	.....A.....G..A.....G.....	3398
AAV-1	TATTTCCCTTCTCAGATGCTGAGAACGGGCAACAACCTTTACCTTCAGCTACACCTTTGAG	3473
AAV-2	..C..T.....C..T..C..A.....T.....	3450
AAV-6	.....A..G.....T.....C...	3458
AAV-1	GAAGTGCCTTTCCACAGCAGCTACGCGCACAGCCAGAGCCTGGACCGGCTGATGAATCCT	3533
AAV-2	..C..T.....T.....T.....T..C.....	3510
AAV-6	..C.....	3498
AAV-1	CTCATCGACCAATACCTGTATTACCTGAACAGAACTCAAAATCAGTCCGGAAGTGCCCAA	3593
AAV-2	.....G.....T...G.....AA.C.C..CAAGT...CCA..ACG	3570
AAV-6	.....G.....G.....	3578
AAV-1	AACAAGGACTTGCTGTTTAGCCGTGGGTCTCCAGCTGGCATGTCTGTTTCAGCCCAAAAC	3653
AAV-2	C.GTCAAGGC.T.A...TCT.AG.CCGGAG.GAG..A...TCGG.AC...T.T.GG...	3630
AAV-6	.....G.....	3638
AAV-1	TGGCTACCTGGACCCTGTTATCGGCAGCAGCGCGTTTCTAAAACAAAACAGACAACAAC	3713
AAV-2	.....T.....C..C.....A..A.CA..G...TCTG.G..T.....	3690
AAV-6	.....C.....	3698
AAV-1	AACAGCAATTTTACCTGGACTGGTGCTTCAAAATATAACCTCAATGGGCGTGAATCCATC	3773
AAV-2	.....TG.A.ACT.G.....A...A.C..G..CC.....CA.A..C..TC.G	3750
AAV-6	.....C.....T.....T..A	3758
AAV-1	ATCAACCCTGGCACTGCTATGGCCTCACACAAAGACGACGAAGACAAGTTCTTTCCCATG	3833
AAV-2	G.G..T..G..GC.C..C.....AAGC.....G.....T.....A.....T.....TCA.	3810
AAV-6	.....A.....	3818
AAV-1	AGCGGTGTCATGATTTTGGAAAAGAGAGCGCCGGAGCTTCAAACACTGCATTGGACAAT	3893
AAV-2	.....G..TC.C..C.....G..GC.AG..T.A.AGAAAA...TGTGAACA.T..A..G	3870
AAV-6	.....G.....	3878
AAV-1	GTCATGATTACAGACGAAGAGGAAATTAAAGCCACTAACCCTGTGGCCACCGAAAGATTT	3953
AAV-2	.....CGG.A.A..C..T..C.....T..G..GCAG.A.	3930
AAV-6	.....C.....C.....C.....	3938
AAV-1	GGGACCGTGGCAGTCAATTTCCAGAGCAGCAGCACAGACCCTGCGACCGGAGATGTGCAT	4013
AAV-2	..TT.T..AT.TAC...CC.....AG...A..G.C.AG.A..T...C.....CA.C	3990
AAV-6	.....T.....C.....	3998
AAV-1	GCTATGGGAGCATTACCTGGCATGGTGTGGCAAGATAGAGACGTGTACCTGCAGGGTCCC	4073
AAV-2	A.ACAA..C.TTC.T..A.....C.....G..C.....T.....T.....G...	4050
AAV-6	T.....C.....A.....C.....A.....T	4058

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FIG 1F

AAV-1 ATTTGGGCCAAAATTCCTCACACAGATGGACACTTTCACCCGTCTCCTCTTATGGGCGGC 4133
AAV-2 ..C.....A..G.....A.....G..C.....T.....C.....C..C.....T..A 4110
AAV-6G.....C..... 4118

AAV-1 TTTGGACTCAAGAACCCGCCTCCTCAGATCCTCATCAAAAACACGCCTGTTCTGCGAAT 4193
AAV-2 ..C.....T..AC....T.....A.....T.....G.....C..G..A..... 4170
AAV-6T...C..... 4178

AAV-1 CCTCCGGCGGAGTTTTTCAGCTACAAAGTTTGCTTCATTCATCACCCAATACTCCACAGGA 4253
AAV-2 ...T..A.CACC..CAGT..GG.....C.....A..G.....G... 4230
AAV-6A.....G.....G..T..... 4238

AAV-1 CA-AGTGAGTGTGGAAATTGAATGGGAGCTGCAGAAAGAAAACAGCAAGCGCTGGAATCC 4312
AAV-2 ..CG..C..C.....G..C..G.....G.....A..... 4290
AAV-6 ..-.....C.....G.....A..... 4297

AAV-1 CGAAGTGCAGTACACATCCAATTATGCAAAATCTGCCAA-CGTTGATTTTACTGTGGACA 4371
AAV-2A.T.....T.....C..CAAC..G....TT..T...G..C.....C.....T. 4350
AAV-6T.....T..C.....-.....C..... 4356

AAV-1 ACAATGGACTTTTATACTGAGCCTCGCCCCATTGGCACCCGTTACCTTACCCGTCCCCTGT 4431
AAV-2 CT.....CG.G...T.A.....A.A.....G..T...AAT.... 4410
AAV-6C..... 4416

VP1-3 stop PolyA signal

AAV-1 AATTACGTGTTAATCAATAAACCGGTTGATTCGTTTCAGTTGAACTTTGGTCTCCTGTCC 4491
AAV-2G.T.....T..A.....TGC GTA 4470
AAV-6GT.....A.....G.....A....G 4476

AAV-1 TTCTTATCTTATC-GGTTACCATGGTTAT-AGCTTACACATTA--ACTGCTTGGTTGCGC 4547
AAV-2 ..TC.T.....TA...T.....C..CGTAGA..AGT.GC.TGG.G.G..AA.CATTA 4530
AAV-6 ..A.....T...C.....A.CA.C-C.G.....--.....A..... 4533

AAV-1 TTCGCGATAAAAGACTTACGTCATCGGGttaccctagtgatggagttgcccactccctc 4607
AAV-2 ACTA.A.gg.a-----g..... 4570
AAV-6at.----- 4572

AAV-1 tctgcgcgctcgctcgctcggtggggccggcagagcagagctctgccgtctgcggacctt 4667
AAV-2 .c.....ac..a.....gc..c..a..g..gc...a.gc.c.gg... 4630
AAV-6 .a.....g..... 4632

AAV-1 tgggtccgcaggccccaccgagcgagcgagcgcgagagaggagtgggcaa 4718
AAV-2 ..cc.g.gc....t..gt.....C... 4681
AAV-6t..... 4683

AAV-1 TR

A A A
G C
G C
T A
C G
G C G C
C G C G
C G
A A T G A C A
G C C G G G T G G C T C G C T C G C G G T C T C C C C T C A C C C G T T
A C G G C C C A C C G A G C G G A G C G C G C G A G A G A G G G A G T G G G C A A C T C C A T C A C T A G G G G T A A
G C C T
C G C G
C G
C A T G
G C
G A T C
G C
C G
T T
C
T

---aav-1 itr
---aav-2 itr
---AAV-1 ITR

a

t

c

t c c t

FIG 2

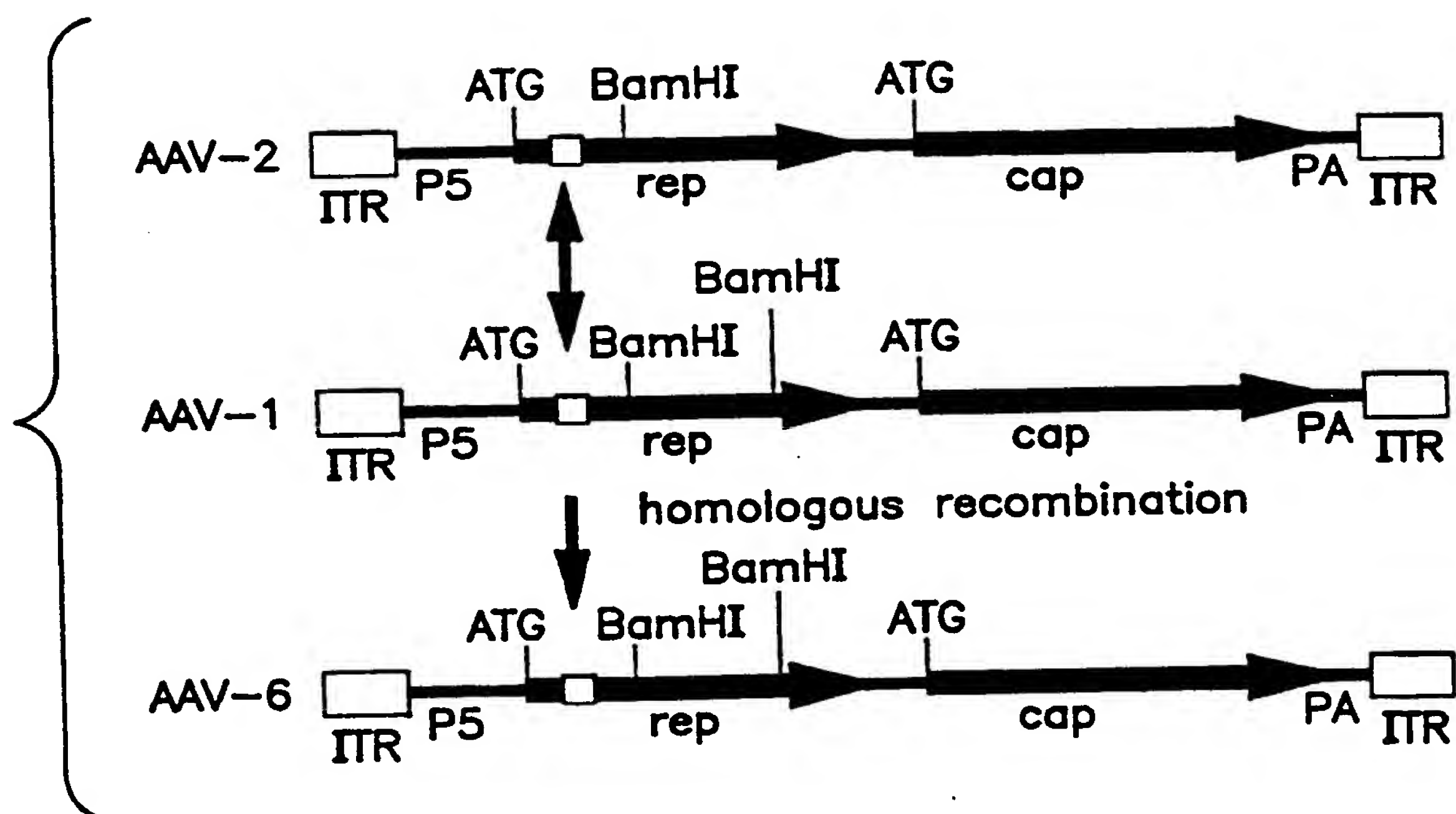


FIG. 3A

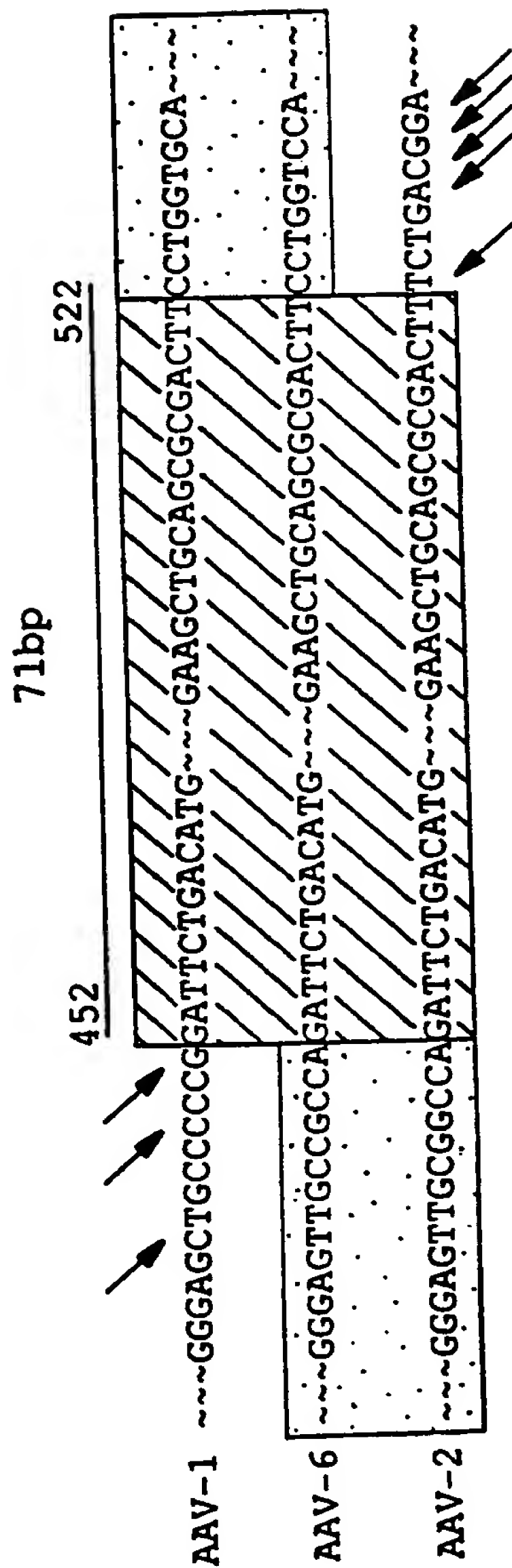


FIG. 3B

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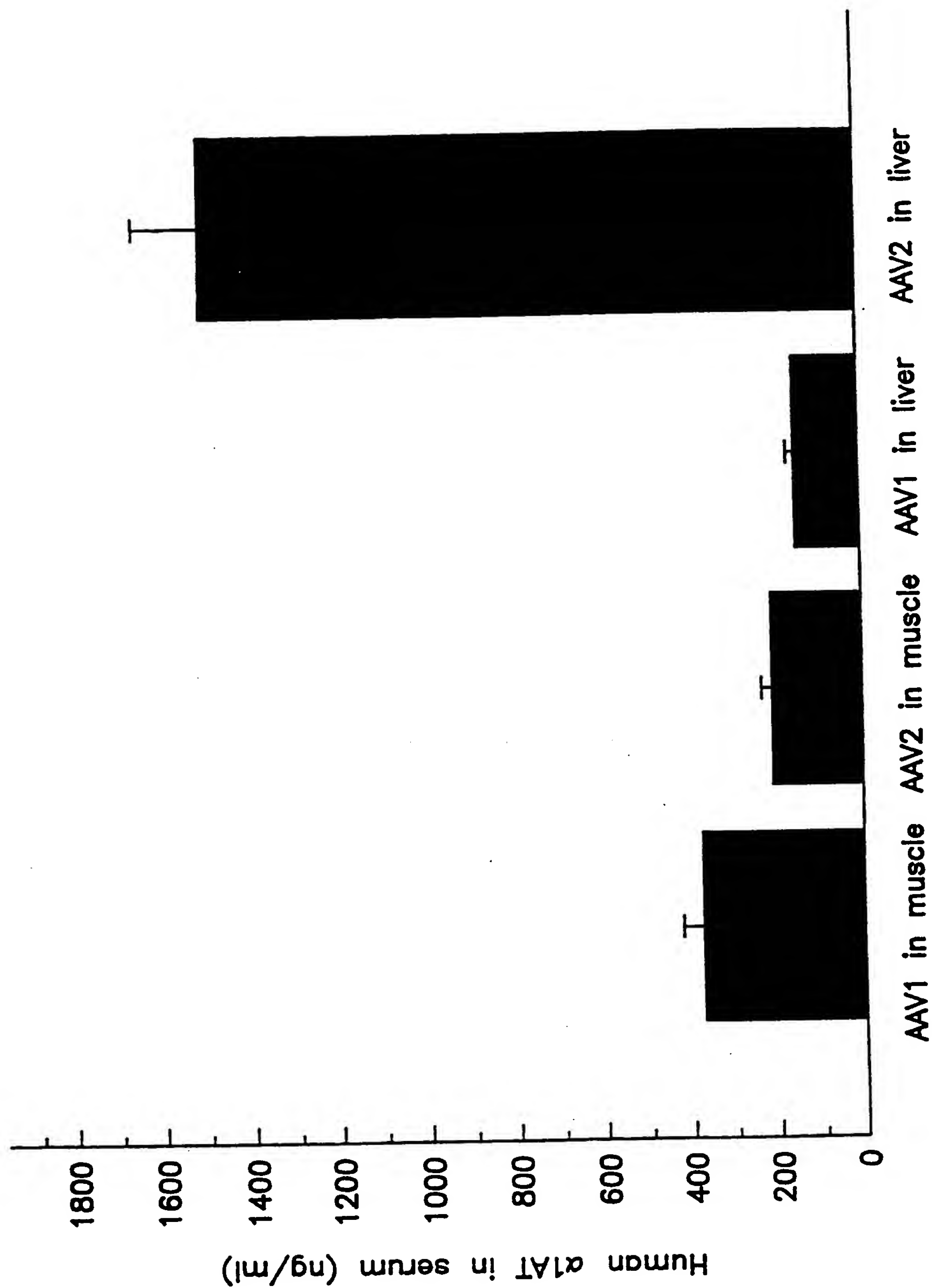


FIG. 4A

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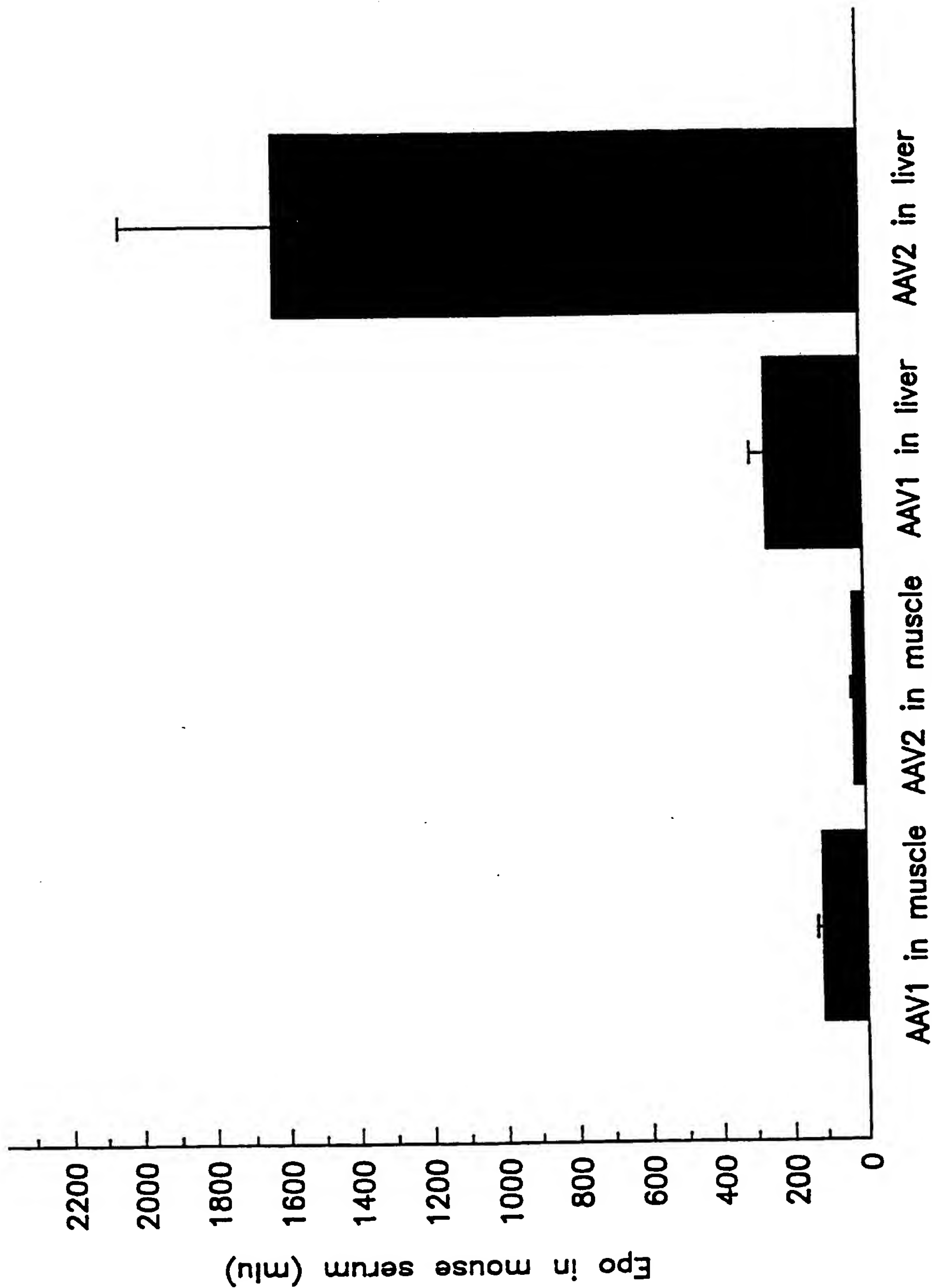


FIG. 4B

FIG. 5A

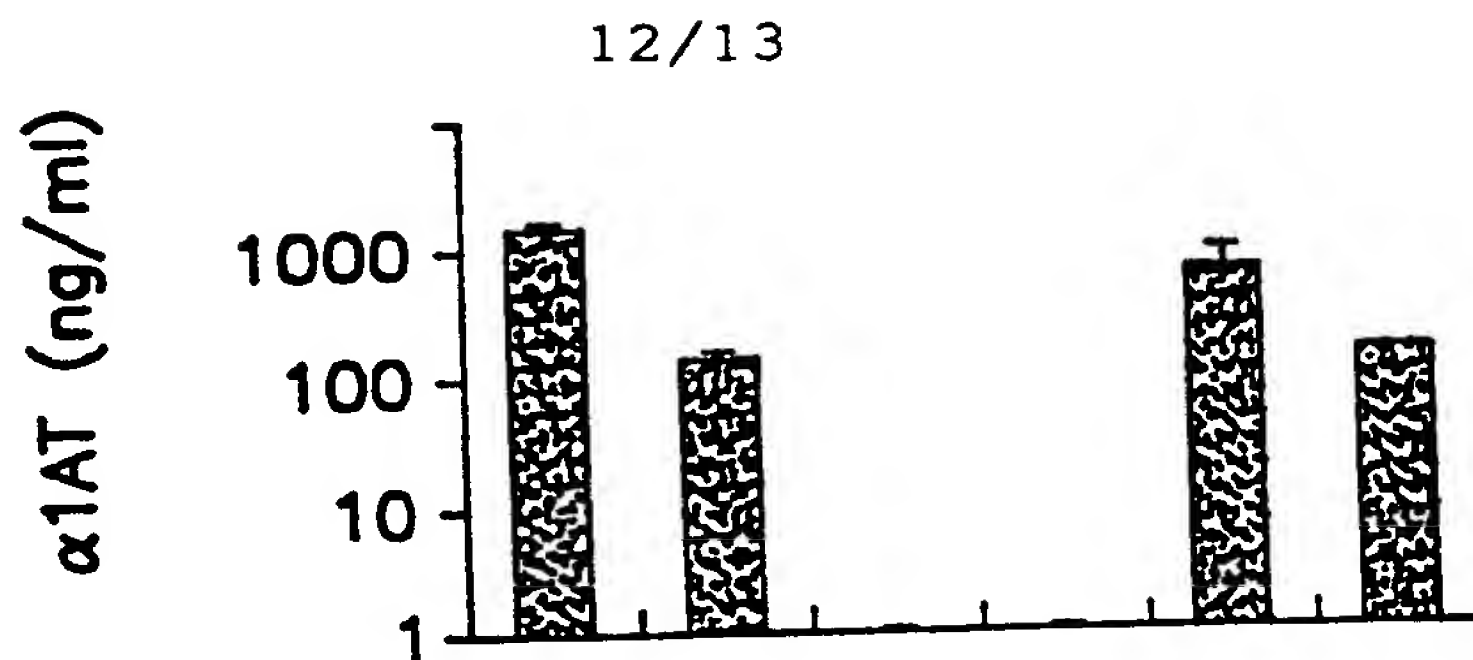


FIG. 5B

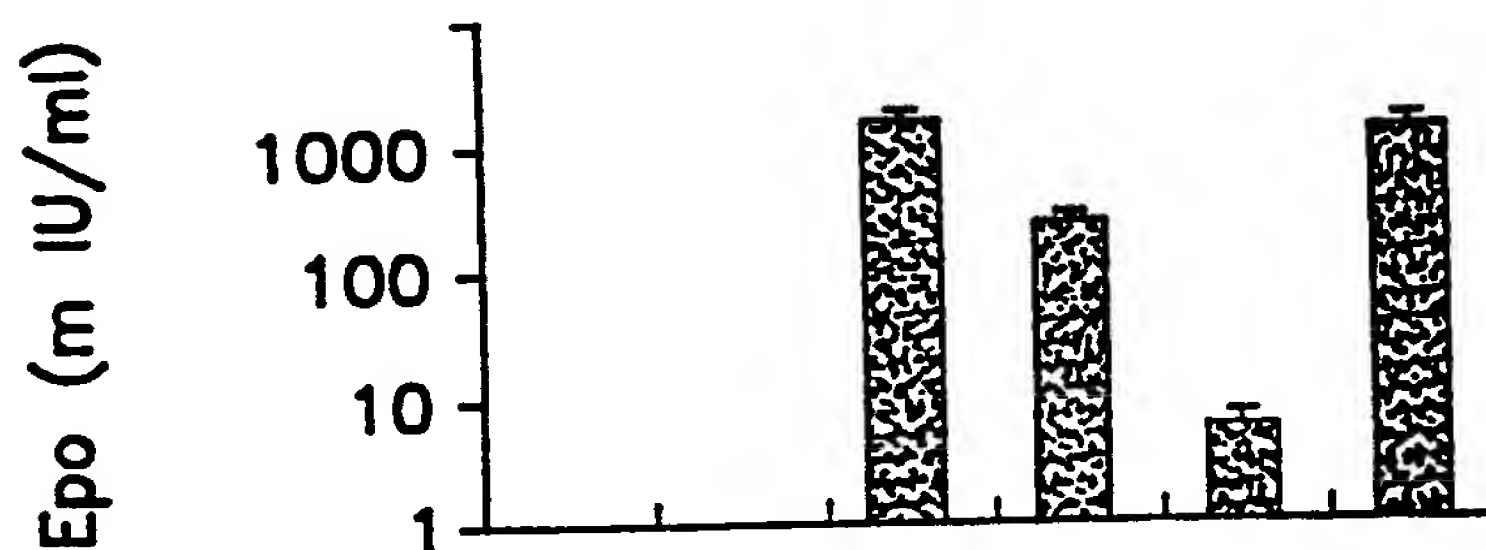


FIG. 5C

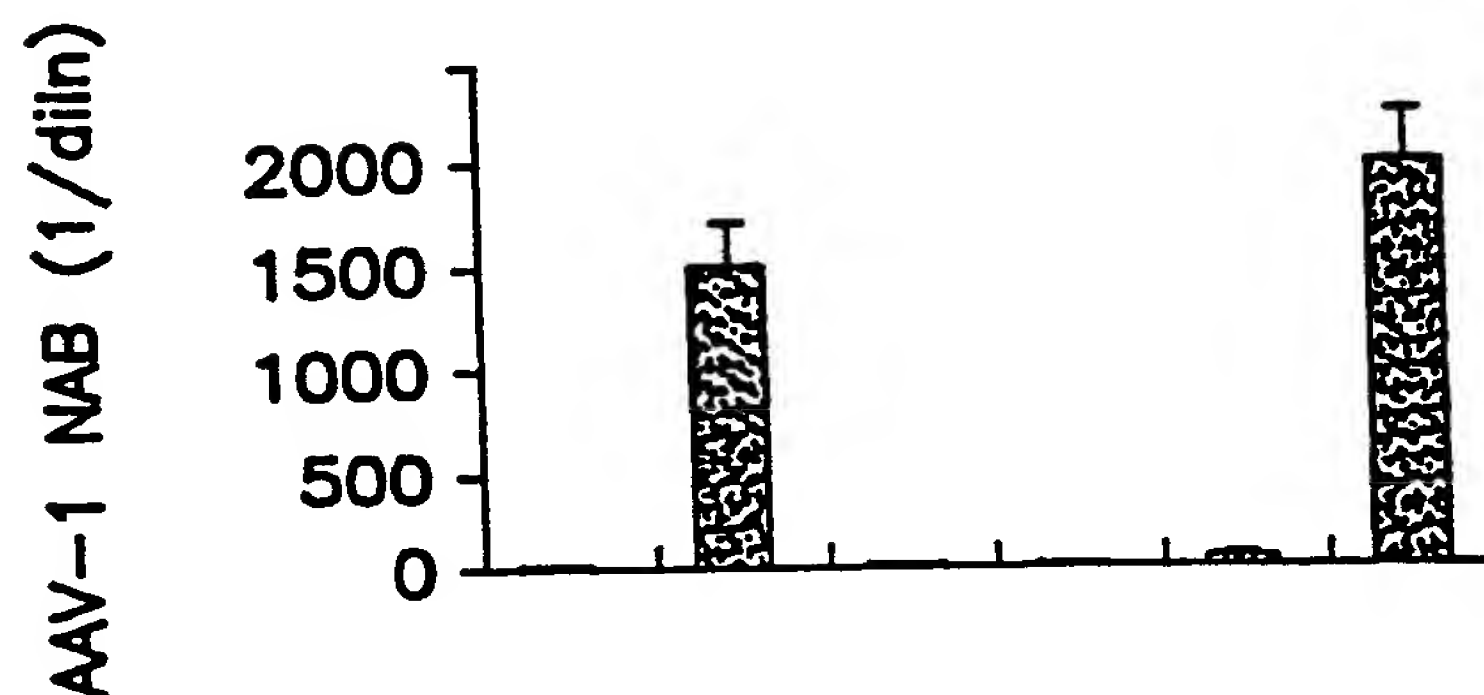
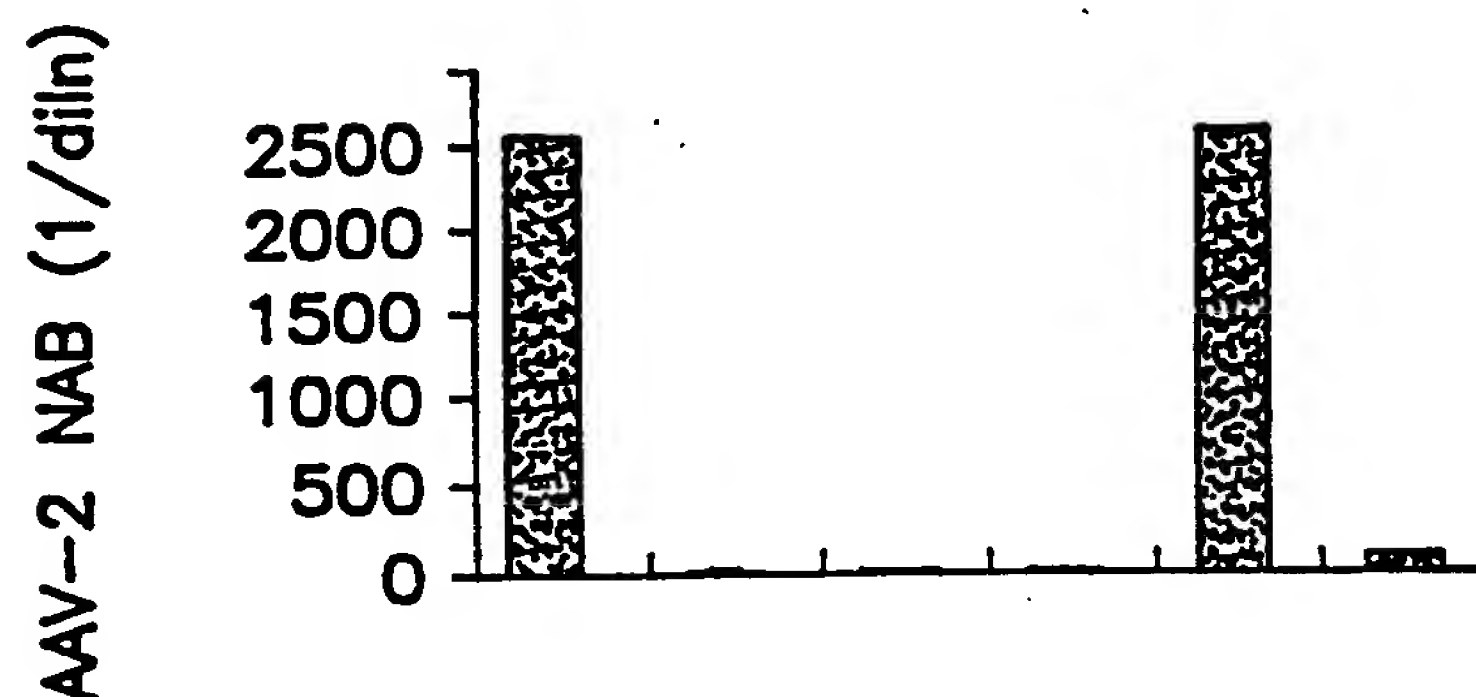


FIG. 5D



Group	1	2	3	4	5	6
Vector1- $\alpha 1AT$	AAV2	AAV1	PBS	PBS	AAV2	AAV1
Vector2-EPO	AAV2	AAV1	AAV2	AAV1	AAV1	AAV2

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FIG. 6A

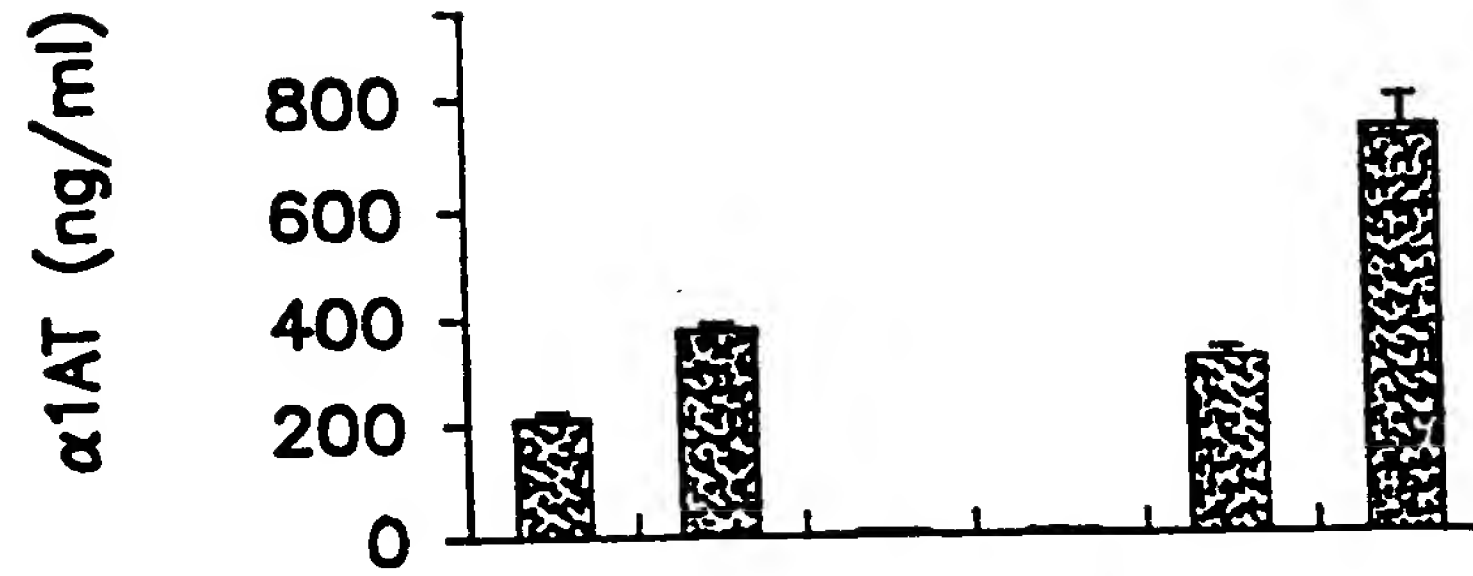


FIG. 6B

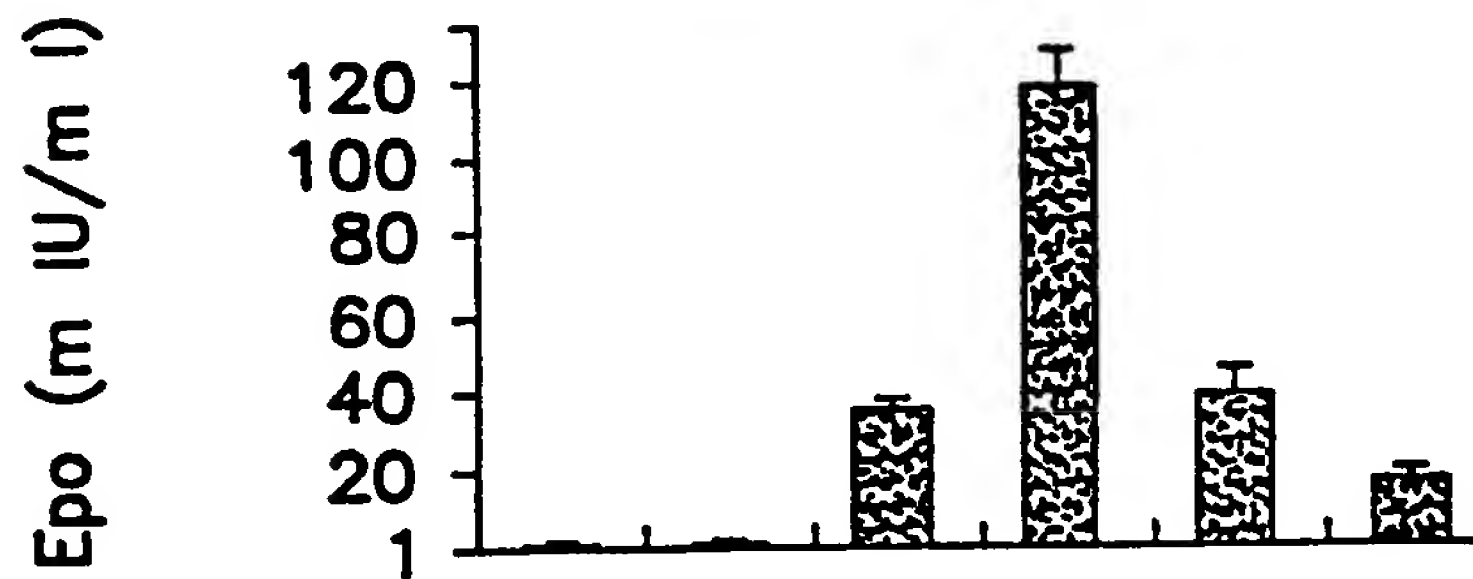


FIG. 6C

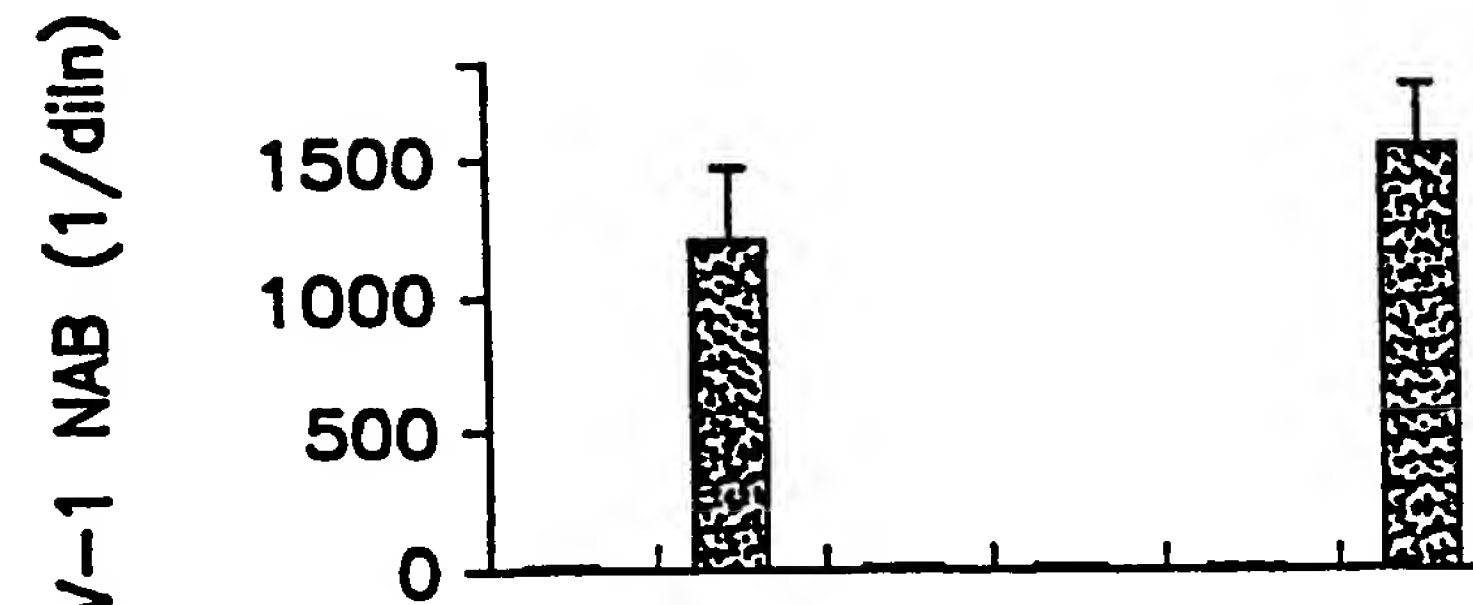
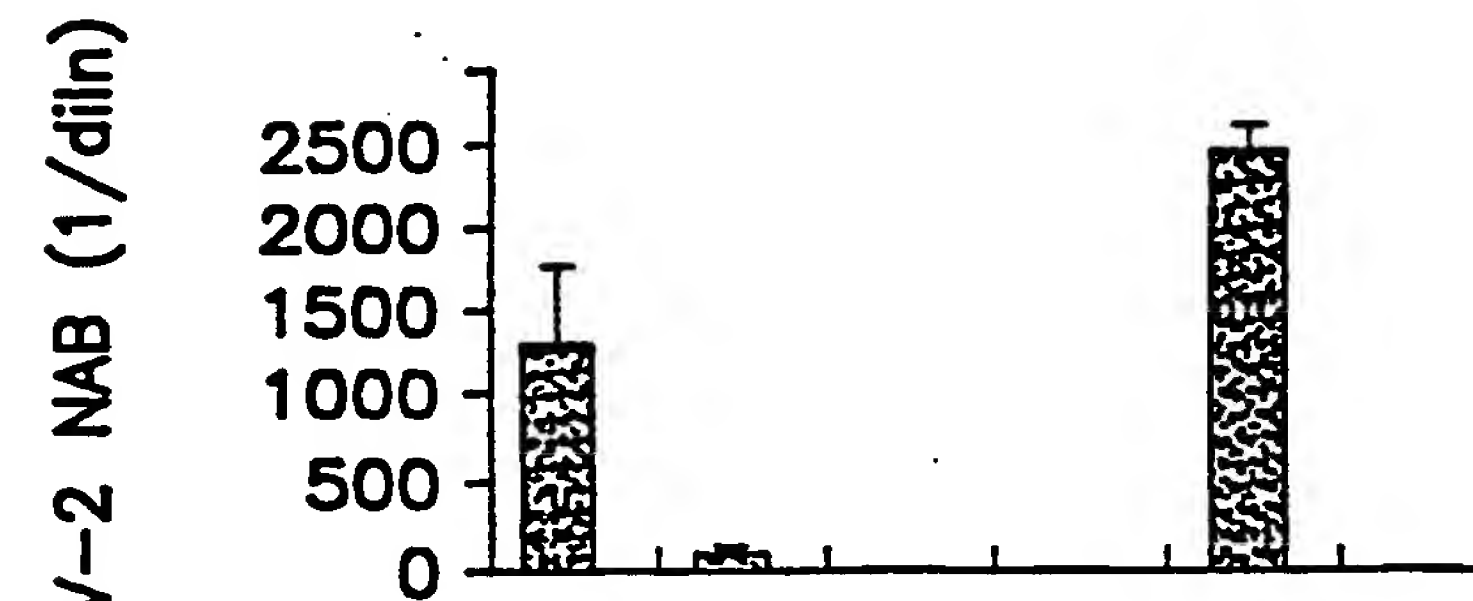


FIG. 6D



Group	1	2	3	4	5	6
Vector1-α1AT	AAV2	AAV1	PBS	PBS	AAV2	AAV1
Vector2-EPO	AAV2	AAV1	AAV2	AAV1	AAV1	AAV2